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Hickory-trees. No trees give more character to the flora of eastern North America than the Hickories; the trees of no other genus of plants of the United States produce food so valuable to man, and among them are individuals which are not surpassed in majestic beauty by any deciduous-leaved tree of the northern hemisphere. It was long believed that eastern North America was the sole possessor of Hickory-trees, but recently a species has been found in southern China, with Sassafras, Tulip-tree and Kentucky Coffee-tree another interesting link between the floras of eastern North America and eastern continental Asia. The American Hickory-trees fall naturally into two groups. In the first group the trees, with one exception, have close bark, winter-buds covered with scales which do not overlap and fruit furnished with wings at the junction of the divisions of the thin husk. The shell of the nut of the species of this group, with one exception, is thin and brittle, and the kernel is bitter in some of the species and sweet in others. In the second group some species have scaly and others close bark, winter-buds covered with overlapping scales, and fruit without wings or with only slightly developed wings. The shell of the nut of the different species is thick or thin but is not brittle, and the kernel is always sweet. To the first group belongs the Pecan (*Carya pecan*), a tree of the lower Mississippi valley, eastern Texas and northeastern Mexico which on deep rich bottom land sometimes reaches the height of one hundred and eighty feet and forms a tall massive trunk six feet in diameter, and a broad crown of slightly pendulous branches. In beauty few trees surpass the Pecan, and no tree which grows beyond the tropics equals it in the abundance and value

of its nuts, which now raised in southern orchards of selected varieties have become an important article of food and have given rise to a large and rapidly increasing industry. Only one species of this group, the Bitternut or Pignut (*Carya cordiformis*) grows at the north. This is a fast growing tree often a hundred feet high, with a tall trunk, spreading branches which form a broad head, slender branchlets and bright yellow winter-buds. The fruit is globose or slightly longer than broad, and more or less covered with yellow scurfy scales, and the small thin-shelled nut contains a seed covered with a bitter skin which protects it even from the nut-hunting boy. One of the interesting trees of this group, the Nutmeg Hickory (*Carya myristicaeformis*), is a rare and local tree in South Carolina, Alabama, Mississippi, Louisiana, southern Arkansas and eastern Texas. It owes its name to the oblong red-brown nuts marked by longitudinal bands of small gray spots. From the other species of this group it differs in the thick hard shell of the nut, which makes the species intermediate between the trees with bud-scales which do not and which do overlap. In the first group only the southern Water Hickory (*Carya aquatica*) has scaly bark. An inhabitant of deep river swamps often inundated during a considerable part of the year from southern Virginia and southern Illinois southward, the Water Hickory is a slender tree often a hundred feet tall, with much compressed, broad-winged, clustered fruits broadest above the middle and flat, four-angled, dark red-brown, longitudinally wrinkled nuts with intensely bitter seeds. The other species of the first group, *Carya texana*, is a rare and local tree of eastern Texas, southern Arkansas, and western Mississippi. Popularly called the Bitter Pecan, it differs chiefly from the real Pecan in its much flattened fruit and nut, and intensely bitter seed.

The trees of the second group differ in the thickness of the branchlets, in their scaly or close bark, in the thickness of the husk of the fruit and of the shell of the nut. The most valuable trees of this group are the species with bark which separates on old trunks into long, broad, loosely attached scales, popularly known as Shellbarks or Shagbarks. As a nut tree the most valuable of these, and after the Pecan the most valuable nut tree in America, is *Carya ovata*, a common and widely distributed species, ranging with *Carya cordiformis* further north than the other species. This tree is distinguished by its leaves with unusually five leaflets, its large globose fruit with a thick husk splitting freely to the base, and by its small, white, compressed, angled, thin-shelled nut with a comparatively large seed of excellent flavor. The Big or Bottom Shellbark (*Carya laciniosa*) is a taller tree often a hundred and twenty feet tall, and an inhabitant of deep, often inundated bottom-lands. Rare east of the Appalachian Mountains, it is very abundant in the valley of the lower Ohio River and in central Missouri. From other Hickories it can be distinguished by the orange color of the year-old branchlets and by its large winter-buds often an inch long and two-thirds of an inch thick. The leaves are composed of from four to nine, usually seven, leaflets, and the fruit, which is the largest produced by any Hickory-tree, is usually oblong with a thick freely splitting husk and more or less compressed, prominently

angled, reddish brown nut up to two inches in length and an inch and a quarter in width, with a thick, hard shell and a comparatively small sweet seed. Of the species with close bark the best known, perhaps, is the tree always called "Hickory" by persons living in the region where this tree is common, but in books generally called Mockernut or Bid Bud Hickory (*Carya alba*). Less common at the north, this is the most generally distributed Hickory-tree of the south where it grows usually on dry ridges and less commonly on alluvial land. The fruit is oblong and often broadest above the middle, or subglobose with a thin husk splitting finally to the middle or to the base and a globose or oblong, often long-pointed, reddish brown nut with a thick hard shell and a small sweet seed. Common northern Hickory-trees are *Carya ovalis* and *C. glabra*, both with several distinct kinds of nuts. The former has slightly scaly bark, ellipsoid, globose or pear-shaped fruit with a generally thin husk which splits freely to the base or nearly to the base, and a thin-shelled nut too small to be of much value. The bark of *Carya glabra*, usually incorrectly called Pignut, is close and smooth; the branchlets are very slender, and the fruit is pear-shaped, much compressed and often gradually narrowed below into a stalk-like base; the husk is very thin and remains closed until after the fruits have fallen, or opens tardily for about a third of its length; the nut is small, globose or short-oblong, compressed, and very thin-shelled, with a sweet seed. Southward a form of this tree (var. *megacarpa*) has stouter branches, larger buds and larger fruit, with a thicker husk. Of the other species, which are all southern, the most widely distributed is the variety of *C. Buckleyi* with pear-shaped fruit (var. *arkansana*). This is the common Hickory of the Ozark region of Missouri and Arkansas, and of Texas where it is the common and often the only Hickory from the coast to the foot of the Edwards Plateau.

Hybrid Hickories. A few hybrid Hickory-trees are now known, mostly between species of the two groups, *Carya cordiformis* and *C. pecan.* being usually one of the parents of these hybrids, the exception being *C. Dunbarii*, a hybrid of *C. laciniosa*, and *C. ovata* from the valley of the Genessee River in New York. In the Arboretum collection are now growing *Carya pecan*, *C. texana*, *C. cordiformis*, *C. myristicaeformis*, *C. ovata*, *C. ovata fraxinifolia*, *C. ovata Nuttallii*, *C. carolinae-septentrionalis*, *C. laciniosa*, *C. alba*, *C. pallida*, *C. glabra*, *C. glabra megacarpa*, *C. ovalis*, *C. ovalis obcordata*, *C. ovalis odorata*, *C. ovalis obovalis*, *C. Buckleyi* var. *arkansana*, and the hybrid *C. Brownii*, and its variety *varians*, *C. Laneyi*, and its variety *chateaugayensis*, *C. Schneekii*, *C. Nussbaumerii* and *C. Dunbarii*. There are also in the collection small plants of a number of named forms of *C. ovata* selected for the size and good quality of their nuts to which nut-growers in the northern states are now paying much attention. The fact that such southern species as *C. texana*, which grows where sugar is one of the principal crops, and *C. myristicaeformis*, which grows only where cotton is successfully cultivated, have proved hardy here indicates that it may be possible to establish the other southern Hickories in the Arboretum.

Laburnum alpinum. The large plant of this *Laburnum* near the upper entrance to the Shrub Collection from the Forest Hills Road has this year been covered with its long racemes of clear yellow flowers and has shown, as it has for many years, the value of this shrub for northern gardens. *Laburnum alpinum*, which is a native of the elevated regions of southern Europe, is usually spoken of as the "Scotch Laburnum" probably because it is a favorite in the gardens of north Britain. In those of New England it is still extremely rare, although it is the handsomest large shrub with yellow flowers which is perfectly hardy here. It is hardier than *Laburnum vulgare*, or, as it is now called, *Laburnum anagyroides*, the small tree with shorter racemes of flowers which has been a good deal planted in the eastern states and which at the north is not always hardy, although occasionally good specimens are to be seen in the neighborhood of Boston. There are several garden forms of this *Laburnum* which have not, however, ever grown well in the Arboretum. A better plant for New England than *Laburnum vulgare* is its hybrid with *L. alpinum*, known as *L. Watereri* or *L. Parksii*. This is a hardy small tree and when in flower the handsomest tree with yellow flowers which can be grown in this climate. It flowered well this year in the Arboretum two weeks ago but the flowers have now faded.

A new Azalea. Several plants have been flowering during the past week of a handsome Azalea which is believed to be a hybrid between two American species, *Rhododendron arborescens* and *R. calendulaceum*, to which the name *R. Anneliesae* (see *A Monograph of Azaleas*) has been given. These plants were raised accidentally at the Arboretum from seeds probably of *R. calendulaceum* sown in 1896. They have been growing with that species and are now plants from four to six feet tall, and are valuable because they flower later than most forms of *R. calendulaceum*. From that species they chiefly differ in the more glabrous under surface of the leaves, in their sparsely hairy branchlets, and in the long corolla-tube of the more fragrant flowers which in the type plant are pale pink marked with a large yellow blotch, but in other individuals are orange-red and clear yellow. In shape and color the leaves resemble those of *R. arborescens*, but differ from those of that species in the presence of hairs on the underside of the midrib; from *R. arborescens*, too, it differs in the color of the flowers and in the hair near the base of the style.

Late Lilacs. *Syringa Sweginzowii*, one of the last to bloom and for some persons the most attractive of the species of Lilac recently introduced from China, has been covered as usual with its narrow clusters of long-tubed fragrant flowers, which flesh color in the bud become nearly white after opening. This species flowers freely as a small plant. Belonging to the group of species of which *Syringa villosa* is the best known and the most valuable, *S. reflexa* and *S. Sargentiana* are blooming sparingly this year. The two species are large, vigorous and hardy shrubs, with the large, dark green leaves of *S. villosa*.

The Laurels (*Kalmia latifolia*) at the northern base of Hemlock Hill are now in bloom, and the last and greatest flower show of the Arboretum year is at its height.